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## New Plants from Wyoming.—V\*

BY AVEN NELSON

### **Scirpus paludosus**

Perennial from corm-like tubers, which bear short horizontal rootstocks that produce terminally other propagative tubers: culms moderately stout, erect, 4–8 dm. high, triangular, the two faces plane, the other narrower and somewhat grooved: leaves pale green, often equalling or even exceeding the culms, 5–8 mm. wide, glabrous, longitudinally nerve-grooved (11–25 nervures): involucre leaves 2 (possibly rarely 3), both much exceeding the inflorescence, the shorter from 5–10 cm. long, the other twice or thrice as long: spikelets 3 to several in a dense, terminal head, ovate or oval, 10–20 mm. long, 6–10 mm. in diameter: scales narrowly ovate, membranous, puberulent, light brown, two-toothed at apex, the midrib prolonged into an awn about one-fourth as long as the scale; bristles usually 2, twice the length of the akene; style about 8 mm. long, two-cleft for less than half its length; akene lenticular, broadly obovate, nearly 3 mm. long, tipped with a conical tooth, brown, the surface shiny, finely pitted under a lens.

This species is probably most closely related to *S. campestris* Britton, from which it is clearly separated by its remarkable tubers (subspherical, 10–25 mm. in diameter), to say nothing of the minor characters given in the description. It is a plant that thrives in the most pronounced saline soils. The first specimens were secured on Salt Creek, near Newcastle, July 30, 1896, but it seems to occur in all the strongly alkaline marshes in the southern part of the state as well. The best specimens were secured at Granger, Sweetwater County, from the salt-encrusted bed of a dry pond where it was absolutely the only vegetation. Some of the soil (?), where it was growing, was taken for analysis and found to contain more than 60% of soluble salts.

Type specimen in Herbarium University of Wyoming, no. 3874, Granger, July 30, 1897. Collected also on the Laramie Plains in the margins of the Soda Lakes that occur at intervals. The tubers are never absent; the growth is often luxuriant and where it is accessible cattle eat it with avidity.

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\* Professor Nelson has generously deposited cotypes of these plants in the herbarium of Columbia University.—ED.

**Sagittaria hebetiloba**

Monoecious with the lower verticils fertile, scapes 1–3, 2–5 dm. high, simple: leaves several, apparently all similar; petioles about equaling the scapes, rather stout, blade large, 8–14 cm. long (including the lobes), curved on the margins, subacute, lobes short, rounded-obtuse, about one third the length of the rest of the blade: bracts linear-lanceolate, 15–20 mm. long, subscarious, greenish-veined, spreading or reflexed: flowers large, about 2 cm. across; inner perianth leaves white, obovate or orbicular, the outer oval, greenish-veined, scarious-margined: pedicels short, ascending, 10–25 mm. long, fertile and sterile about equal: stamens 15–25, filament scarcely longer than the anther, but slightly dilated at base: fruiting head globular, 10–14 mm. in diameter: akene about 2 mm. long, obovate, tapering gradually toward the base, winged on both margins and around the summit, more narrowly so on the side of the beak; beak oblique or erect, very short, merely a blunt tooth equaling the rounded summit of the body of the akene.

Possibly local, observed but once, growing half emergent in a warm spring bog. Type specimen no. 2763, Platte Cañon, Larame County, August 27, 1896.

**Lilium montanum**

Bulb 15–25 mm. in diameter, depressed globose, its thick fleshy scales from ovate to broadly obovate: stems 3–4 dm. high, rather stout: leaves glabrous, dark green, but slightly lighter on the lower face, minutely roughened on the edges, alternate except the uppermost, the upper whorl of 5–7, a second whorl of fewer leaves occasionally present, from narrowly to broadly lanceolate, tapering but slightly toward the sessile base, 4–6 cm. long, smaller downward, the lower reduced to scarious scales: one-flowered on a comparatively stout erect peduncle which is scarcely longer than the subtending leaves; perianth segments ascending, tips not reflexed, elliptic-oblong, tapering gradually towards both ends, the apex terminating in a short obtuse tooth, the claw short and broad (margined) less than a third the length of the blade, from brownish-red on the inner face to orange-red on the other, the orange-colored base of the inner face dotted with numerous purplish-black spots: stamens and stigma purplish: capsules oblong-cylindric, 3–4 cm. long.

For some time I have suspected that this was new, but in the absence of abundant material I have tentatively held it either under the name of *L. umbellatum* or *L. Philadelphicum*, to both of

which it is related in some of its characters. It differs, however, from both in its stouter habit, broader leaves, single flower, broader bulb scales and floral characters. It has the leaf arrangement of *L. umbellatum* but even broader leaflets than *L. Philadelphicum*. Both of the preceding are found in dry soil while this occurs only in rich, shaded bog lands, mostly at subalpine (7000–9000 ft.) stations but sometimes in cold wet ground at lower altitudes. Secured at several points in this state and probably found in similar situations throughout the northern Rockies. Type specimen no. 4376 by Mr. Elias Nelson from Saw Mill creek in the Laramie Hills, July 1, 1898.

#### **Abronia elliptica**

Perennial from a thick, deep-set, semi-fleshy, branched root: stems several from the crown, ascending, the underground portion rhizome-like and scaly, leafy above, minutely viscid-pubescent, branched from the base only, the branches 1–2 dm. long: leaves fleshy, glabrous, somewhat wrinkled when dry, mostly elliptic, more rarely oval or ovate, obtuse at both ends or somewhat truncate or subcordate at base, 15–30 mm. long; petioles from 1–3 times as long as the blade: bracts of the involucre obovate, subacute, 8–15 mm. long, mostly 5 in number, greenish-white: flowers greenish-white, numerous in the cluster, the individual flowers inconspicuous, 15–20 mm. long, the tube slightly dilated upwards, limb small, lobes suborbicular, sinus narrow: fruit obscurely pubescent, turbinate, summit truncate or subcordate, the sides bearing five vertical wings with rounded obtuse summits, the central cavity of the fruit extending through them, about 7 mm. high; akene oblong, 3–4 mm. long, loosely sheathed by winged pericarp.

A very distinct species, readily recognized among those hitherto described. In habit, but not in size, it suggests *A. fragrans* Nutt., while in fruit character it belongs with the *A. latifolia* group. It is of frequent occurrence in south-central Wyoming on the white desert-like, Cretaceous clay slopes of the Red Desert and other similar regions. Type specimen in Herbarium University of Wyoming, no. 3024, Green River, May 30, 1897. Excellently fruited specimens from Medicine Bow, July 9, 1898, by Mr. Elias Nelson.

#### **Arenaria Uintahensis**

Perennial, caespitose, the numerous, spreading branches of caudex sub-ligneous: leaves chiefly basal on the crowns, numerous, in fascicles, glabrous, narrowly linear, acerose, 1–2.5 cm.

long: stems 1, or sometimes 2, from each crown, glabrous below, minutely glandular pubescent above, slender, erect, 10–15 cm. long, few-leaved, nodes not conspicuously swollen, the lower internodes equaled by the leaves, the upper several times longer than the leaves: cyme loose, primary pedicels 10–25 mm., secondary 5–10 mm. long: sepals narrowly ovate, acute, nerveless, scarious, obtusely keeled by the broad, green midrib: petals oblong, obtuse, about 5 mm. long, 2 mm. broad: capsule hardly equaling the sepals, about as long as the divaricate styles, ovate, splitting into ovate, obtuse valves: seeds suborbicular.

Probably nearest to *A. capillaris* Poir from which its stouter habits, its acuminate sepals and its subequal sepals and petals most obviously separate it.

It occurred along the loose shale of the higher bluffs overlooking Bear River, and did not seem to be at all abundant. Type specimen in Herb. University of Wyoming, no. 4640, Cokeville, Uintah Co., June 11, 1898.

#### ***Aconitum ramosum***

Stem 3–5 dm. high, simple below, more or less branched above, the branches ascending, nearly or quite glabrous below, increasingly finely glandular-pubescent upwards: leaves suborbicular in outline, 5–8 cm. in diameter, 3-, or more rarely, 4-parted, the divisions deeply 2- or 3-cleft, these incised, the segments oblong-lanceolate, acute: flowers medium size, sparsely short pubescent; hood 12–16 mm. long, obovate (exclusive of the beak) tapering but slightly toward the obtusish base, beak short, porrect, sub-acute; lateral sepals as broad as long, unequilateral; lower sepals oblong or broadly spatulate,  $\frac{3}{4}$  as long as the lateral and from  $\frac{1}{4}$  to  $\frac{1}{3}$  as wide; follicles cylindric-oblong, 15–20 mm. long, reticulately veined, nearly glabrous.

When this plant was secured its strikingly *Delphinium*-like leaves and some other characters led, in the absence of any specimen of *A. delphinifolium* DC., to its being distributed under that name. During a recent visit to the Missouri Botanical Garden, an examination of the specimens in the Herbarium shows that *A. delphinifolium*, that plant of the far Northwest, is a very different thing from this. This is strict and has fewer, larger leaves with fewer and longer segments, a very different pubescence as well as some differences in flower and fruit characters.

Secured but once, no. 2549, in open grassy ground in a park

on Limestone Range, Black Hills, Weston Co., near the South Dakota line, July 30, 1897. Here it occurred in great profusion though in a day's drive through that region it was met with but once.

### ***Astragalus brevicaulis***

Caespitose, the spreading leaves forming a small mat 8–12 cm. in diameter, appressed silvery-pubescent throughout, perennial from a small, vertical woody tap-root which bears at its summit a caudex of a few short, thickish branches : leaves crowded on the crowns, the persistent stipules and petioles clothing the branches of the caudex ; leaflets usually 5, closely approximated at the end of the slender, 2–4 cm. long petioles, from obovate to oblong, 5–10 mm. long : peduncles exceeding the leaves, 1–several-flowered, prostrate-ascending ; flowers purple, large for the plant ; calyx purplish, campanulo-cylindric, tube about 5 mm. long, generally split nearly to the base by the developing pod, teeth about half as long : banner 15 mm. long, blade orbicular, 10 mm. in diameter ; wings nearly as long as the banner, blade oblong, 2-lobed at apex, the basal lobe large, paralleling the long slender claw ; keel shorter, rounded-obtuse : pod minutely pubescent, sessile, 2-celled or nearly so, falcate, deeply sulcate dorsally, cross section obcordate, 15 mm. or more in length, 4–5 mm. broad : ovules 20–30 ; seeds fewer.

This species seems to be most closely allied to *A. calycosus* Torr., but its purple flowers, larger falcate pod will serve for its immediate separation. It is a rare plant of the desert region of southern Wyoming, occurring sparingly on gravelly ridges. Type specimen no. 4601, from near Ft. Bridger, June 9, 1898.

### ***Astragalus junciformis***

Perennial from a deep-set root, the caudex slender-branched, cinereous-pubescent : stems usually several, more or less paniculately branched throughout their length, 2–4 dm. high, often somewhat striate : stipules small, triangular ; leaves either reduced to a naked, slender petiole and rachis, 4–7 cm. long, or bearing 5–7 distant, linear-oblong leaflets, 8–15 mm. long : peduncles equalling or exceeding the leaves, from very few- to many-flowered ; flowers about 10 mm. long, orchroleucous : standard short and broad, almost reniform, the claw short ; keel broad with an elongated but blunt apex : calyx pubescent with intermingled dark hairs, campanulate, teeth minute : pod strictly one-celled, neither suture much thickened, compressed, linear-oblong, straight, probably about 3 cm. long (fully mature legume not a hand), pubescence similar to that of the stem ; pedicels short, di-

varicate or reflexed (probably all ultimately reflexed): ovules reniform, rather large, nearly filling the pod.

This in habit suggests *A. junceus* Gray, but possibly it is more closely allied to *A. Coltoni* Jones. Its junciform stems and leaves are very characteristic. So far I have found this species in but one locality, viz., near Point of Rocks, Sweetwater Co., where it is an occasional plant on sandy, stony slopes. First secured in 1897, no. 3081 and again, 1898, no. 4839. It comes into blossom early in June.

### ***Astragalus exilifolius***

An acaulescent perennial from large, deep-set roots; caudex multicapital, closely caespitose: leaves densely crowded on the crown, simple, narrowly linear, the petiole-like base almost filiform, 2-4 cm. long, pungently acute, sparsely short hirsute, the dead leaves persisting for a time on the branches of the caudex: stipules scarious, ovate, imbricated, the largest 5 mm. long: peduncles about equaling the leaves, 1-2-flowered; pedicels short, bracts small, scarious: calyx campanulate, glabrous, or nearly so, its lobes subulate, shorter than the 3-4 mm. long tube: corolla showy, 15-20 mm. long, white, the keel tipped with purple: pod sessile, 1-celled, oblong, slightly curved with an acuminate apex, purple mottled, 12-15 mm. long, both sutures prominent, the ventral sharply keeled; seeds few (1-4).

This adds one more member to the section in which *A. spatulatus* Sheld. and *A. simplicifolius* Wats. are the conspicuous members. The characters of this separate it more sharply from both of those than they are separated from each other.

It is of the desert region of south-central Wyoming, occurring as rounded tufts on the barren clay ridges of the Cretaceous formation. Type specimen, no. 4493, by Mr. Elias Nelson, Freezeout Hills, Carbon County, July 10, 1898. Collected also in the Rattlesnake Hills, no. 4996.

### ***Astragalus aculeatus***

Perennial, the stout woody caudex bearing numerous, slender, appressed-caespitose branches, hardly rising above the surface of the soil, the mats from one to several decimeters in diameter: leaves numerous, crowded on the short stems the bases of which are covered with the persistent dead ones: leaflets 5-7, linear-oblong, plane, involute or somewhat channelled, pungently long mucronate, about 8 mm. long, green but under a lens sparsely

hirsute : stipules scarious hirsute on the margins : peduncles about equaling the leaves, from 2-several-flowered : flowers purple, 5-6 mm. long : calyx campanulate, the slender lobes equaling the tube, hirsute, usually some black hairs intermingled : banner broadly obovate, wings elliptic : pod 1-celled, sessile, narrowly ovate, acuminate, hardly exceeding the calyx-lobes.

It seems to be nearest to *A. Kentrophyta* Gray but is distinguished at once by its matted habit, its green leaves, its purple, peduncled flowers as well as by its habitat. This is strictly alpine, forming mats below the snow drifts at the upper limits of vegetation. Type specimen, no. 2445, from the higher summits of the Big Horn Mts., near Dome Lake, July 18, 1896.

I am again indebted to Dr. Rydberg for a comparison of the co-types, sent to Columbia University with specimens of nearly related species. Most of them I also personally studied critically at the Herbarium of the Missouri Botanical Garden. Of these, as well as of those published in previous papers, representative specimens will be placed, whenever possible, in other herbaria including Mo. Bot. Garden, Gray, National, Cornell, etc. The types are all preserved in Herb. University of Wyoming.